REMARKS

Claim Rejections

Claims 1 and 6 are rejected under 35 U.S.C. 102 (b). Claims 2-5 and 7-8 are rejected under 35 U.S.C. 103 (a).

Claim Amendments

Applicant has amended claim 1 to make it clearer and more exact. Claim 1 has been amended to read as follows

> "1. A protective circuit provided for a hard disk drive and conductively joined with an interface situated between a hard disk drive and a computer, comprising:
>
> a rechargeable charge reservoir;
>
> a charge controller conductively connected to a power terminal (D_PWR) of the hard disk drive for charging the charge reservoir; and
>
> a selectable switch conductively connected with the charge reservoir for automatically switching power supply to the hard disk drive; wherein
>
> the charge reservoir is switched automatically to provide power to the hard disk drive for parking the magnetic head thereof safely in case the hard disk drive is extracted improperly."

In addition, several dependent claims have been amended to improve their form under U.S. practice.

ARGUMENT

Page 2 of the Office Action comments that the Stupeck et al reference teaches: "..., and a selectable switch (54) which is used to automatically switch power to the disk drive. This switching takes place to safely park the heads in case the drive is extracted improperly, which corresponds to the emergency power loss in which a sudden power loss to the drive occurs" (emphasis supplied). Applicant respectfully disagrees, for the reasons discussed below.

According to the passage at column 3 of the Stupeck et al reference, lines 63-65, it is described (see Fig. 1):

> "The positioner motor 50 and spindle motor 22 are respectively driven by drive electronics 54 and 56 which are depicted in greater detail in FIGS. 2 and 3."

Next, from the last line of column 3 to line 4 of column 4, it is disclosed:

> "In normal operation, the microprocessor 60 supplies a track address to control logic unit 58. The control logic unit 58 then energizes the positioner motor 50 via drive electronics 54 to move the positioner assembly 28 a certain number of tracks inwardly or outwardly."

Referring to column 4, lines 63-65, it is mentioned (see Fig. 2):

> "The positioner motor 50 of the preferred embodiment comprises a DC brushless motor having two drive windings PW1 and PW2."

In addition, in column 5, lines 29-54, it is disclosed (emphasis supplied):

> "The positioner motor switching means 54 of the preferred embodiment includes four parallel paths 120, 122, 124, and 126 each comprised of series connected switches. Thus, path 120 is comprised of

switches P4 and N4 with winding terminal 82 connected to the conjunction therebetween. Winding terminal 84 is connected between switches P5 and N5 of path 122. Terminal 86 of winding PW2 is connected between switches P6 and N6 of path 124 and its terminal 88 is connected between series connected switches P7 and N7 of path 126. The paths 120, 122, 124, and 126 are connected in parallel between DC voltage source 104 and DC voltage reference 106. Switches P4, P5, P6, P7 are controlled by positioner motor commutation logic 130 of control logic block 58. Switches N4, N5, N6, and N7 are controlled by positioner motor commutation logic and chopping control 132, also part of control logic 58. In normal operation the switches P4-P7 and N4-N7 are selectively enabled to energize the windings PW1 and PW2 in accordance with a first predetermined sequence to rotate the motor in a first direction to move the positioner assembly 28 inwardly. The windings PW1 and PW2 are energized in accordance with a second predetermined sequence to rotate the motor in an opposite direction to move the positioner assembly 28 outwardly."

Further, claim 1 of the reference recites:

"positioner motor switch means connecting said voltage source to said positioner motor drive windings"

From the above extracts, an ordinarily skilled person would clearly know that the selectable switch (54) in this reference DOES NOT serve to SWITCH a power supply to the drive for safely parking the heads to a landing zone when an emergency power loss suddenly occurs. Instead, the switches P4-P7 and N4-N7 of the selectable switch in the reference are selectively enabled to energize the windings PW1 and PW2 of the positioner motor in accordance with a predetermined sequence to rotate the motor in a direction to

move the positioner assembly 28 inwardly/outwardly DURING NORMAL OPERATION.

The passage at column 6 of the reference, lines 6-19, states (emphasis supplied):

> "As previously mentioned, an object of the invention is to respond to a voltage fault condition to move the heads from whatever track they might be on to a landing zone on the disk surface without the benefit of external electric power. To successfully perform this function, it is necessary that it be executed rapidly and with very little power consumption. In accordance with the invention, this head retract operation is accomplished by capacatively storing a certain amount of energy during normal operation of the drive unit **which energy is later used to control logic 58 during the head retract operation** and additionally to use the back EMF of the coasting spindle motor 22 to provide the energy to the positioner motor."

Comparing to the present application, it is known that the power stored in the rechargeable charge reservoir in normal operation **is later applied to the hard disk drive** when a sudden power loss occurs. In other words, the power stored in the rechargeable charge reservoir in normal operation is NOT later used by the reset terminal HD_RST# (control logic) during the period of moving the magnetic head of the hard disk drive to a parking zone.

Next, it is described at column 7 of the reference, lines 9-17 (emphasis supplied):

> "Referring more specifically to the flow chart of FIG. 4A note that the head retract line 70 is continually monitored (block 200) to determine whether a head retract enable signal occurs. If yes, then **the spindle motor FET switches are immediately turned off** (block 202). As will be seen in connection with FIG. 3, this action **enables the switching means**

56 to essentially act as a rectifier to apply the back EMF produced by the coasting spindle motor to charge the capacitor C1. With the spindle motor FET switches turned off, the positioner motor commutation logic 130 and 132 is operated in a conventional stepper motor sequence to move the heads toward the landing zone."

In conclusion, the energy which is used to move the heads toward the landing zone when a power loss suddenly occurs comes from back EMF generated by the coasting spindle motor, whereas the power applied to move the magnetic head of the hard disk drive to a parking zone derives from the stored power in the rechargeable charge reservoir under normal operation.

SUMMARY

In view of foregoing amendments and remarks, applicant respectfully submits that the amended claim 1 and pending claims 2 to 8, are in condition for allowance.

Respectfully submitted,

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